CLAIMS

1. A targeting peptide comprising an amino acid sequence selected from the group consisting of:

AASARLP, VYFPAPN, FSMSTPS, IVAQPRL, FPQTYTT, NIAAFSL, QPRLLHH, NIIPAPT, SPTYPRR, TRSQPPL, NTGPNRV, PPPDWTF, SHFSHLR, AFNYPPH, DFLQVSP, SPDHLFC, LEHPPTT, TYPSSEW, IPMHLHN, TSESPTV, YSLSRSL, NHLSALY, TYSLKSA, TSTMPSR, ETIKTNT, ATGFATP, TNSQPSP, TSFFMPP, TAAYRFW, LPPSLYS, SPSVVPF, HSLTFSI, WNSTTQA, HFTHPTH, AGATAMS, STYPIIR, SWNHARV, NHWHGGL, GILSPSH, EAVPTYS, INSNAPG, YSTHSTR, SDLATVR, INSVSPH, MSSPGPA, LPTKTLF, AAWPTSS, LTAELTP, KIDGTPR, VEPARAS, SIGYPLP, WTSDELH, TLGLHMS, LSNFHSS, SLPRNSD, GYQQVFQ, MSPPGPA, LCMTTLV, SEVAVQG, MAMPQPADHNNS, VSGMSVPVQLAR, MTQTPRTTPWPD, MSLTTPPAVARP, MSNNPIRPPTSG, MTQVYTPPPTST, MTGSQQTLHPPP, MATQPLSGSRLSG, MNMTPPPHSPPK, MTPFPTSNEANL, AMSMTTMPHSPN, MSDLLIEYPPYI, MTLPHELRDGAL, AAVPPPYVMSRP, MSQTPYARPQYV, MTSNPHLNPGPR, MGHNINIPRTPL, LSTPLPYDMRRS, MTRIQDSPYDLR, MSTPPIREQAAH, MTNLPTVTQFPP, MTPIATSIPPQM, MTPTTPIPSLPQ, MTSPHPQTPNLT, MTQQPPLPHPAK, LAKPLPTTSNTG, LSKPIPHIPSSIG, CICRGVGCCLLL, LQPPSMITHPST, LTPPNQVLNPLY, AFPMVGGPDHFR, MLMPQPAHHNNS, AQAMANPLGSHI, SSRIPGFPDPLH, SMRGLPELNPRI, MSSPTVSSAPQY, VLSMQTPPTPLL, THAMSHLDKAH, MAVQPPNTSTSN, MAINDTYPPPRP, MMPPPTSLPSPS, LAQNPIYRAHPH, MQPRPQTLTPAS, LTVPVPVSFAVH, LTSPFSTPLNPR, MAGQPKDSSKTL, ANTPPHTILSTE, MGMTVPENLIVQ, and MTPIQSTQYPHS, or a derivative thereof, for targeting a material to a cell.

2. A targeting peptide according to claim 1 wherein said peptide comprises an amino acid sequence selected from the group consisting of SIGYPLP, NTGPNTV, LSNFHSS, GILSPSH MSSPGPA, MSLTTPPAVARP, MTPFPTSNEANL and MGMTVPENLIVQ, or a derivate thereof.

3. A targeting peptide according to claim 1 wherein said peptide comprises an amino acid sequence selected from the group consisting of SIGYPLP, NTGPNTV, LSNFHSS, GILSPSH and MSSPGPA, or a derivate thereof.

4. A targeting peptide according to claim 1 wherein said peptide comprises an amino acid sequence selected from the group consisting of MSLTTPPAVARP, MTPFPTSNEANL and MGMTVPENLIVQ, or a derivate thereof.

5. A targeting peptide according to claim 1 wherein said peptide is up to 100 amino acids long.

6. A targeting peptide according to claim 1 wherein said cell is a vascular endothelial cell.

7. A targeting peptide according to claim 1 wherein said material to be targeted to a cell is selected from the group consisting of drug delivery vehicles, gene therapy vehicles, bacteria, non-ionic surfactant vesicles, microcapsules and vaccination products.

8. A pharmaceutical composition comprising a targeting peptide in association with a vehicle, the targeting peptide comprising an amino acid sequence selected from the group consisting of:

AASARLP, VYFPAPN, FSMSTPS, IVAQPRL, FPQTYTT, NIAAFSL, QPRLLHH, NIIPAPT, SPTYPRR, TRSQPPL, NTGPNRV, PPPDWTF, SHFSHLR, AFNYPPH, DFLQVSP, SPDHLFC, LEHPPTT, TYPSSEW, IPMHLHN, TSESPTV, YSLSRSL, NHLSALY, TYSLKSA, TSTMPSR, ETIKTNT, ATGFATP, TNSQPSP, TSFFMPP, TAAYRFW, LPPSLYS, SPSVVPF, HSLTFSI, WNSTTQA, HFTHPTH, AGATAMS, STYPIIR, SWNHARV, NHWHGGL, GILSPSH, EAVPTYS, INSNAPG, YSTHSTR, SDLATVR, INSVSPH, MSSPGPA, LPTKTLF, AAWPTSS, LTAELTP, KIDGTPR, VEPARAS, SIGYPLP, WTSDELH, TLGLHMS, LSNFHSS, SLPRNSD, GYQQVFQ, MSPPGPA, LCMTTLV, SEVAVQG, MAMPQPADHNNS, VSGMSVPVQLAR,

MTQTPRTTPWPD, MSLTTPPAVARP, MSNNPIRPPTSG, MTQVYTPPPTST, MTGSQQTLHPPP, MATQPLSGSRLSG, MNMTPPPHSPPK, MTPFPTSNEANL, AMSMTTMPHSPN, MSDLLIEYPPYI, MTLPHELRDGAL, AAVPPPYVMSRP, MSQTPYARPQYV, MTSNPHLNPGPR, MGHNINIPRTPL, LSTPLPYDMRRS, MTRIQDSPYDLR, MSTPPIREQAAH, MTNLPTVTQFPP, MTPIATSIPPQM, MTPTTPIPSLPQ, MTSPHPQTPNLT, MTQQPPLPHPAK, LAKPLPTTSNTG, LSKPIPHIPSSIG, CICRGVGCCLLL, LQPPSMITHPST, LTPPNQVLNPLY, AFPMVGGPDHFR, MLMPQPAHHNNS, AQAMANPLGSHI, SSRIPGFPDPLH, SMRGLPELNPRI, MSSPTVSSAPQY, VLSMQTPPTPLL, THAMSHLDKAH, MAVQPPNTSTSN, MAINDTYPPPRP, MMPPPTSLPSPS, LAQNPIYRAHPH, MQPRPQTLTPAS, LTVPVPVSFAVH, LTSPFSTPLNPR, MAGQPKDSSKTL, ANTPPHTILSTE, MGMTVPENLIVQ, and MTPIQSTQYPHS, or a derivative thereof, the vehicle carrying a pharmaceutically active agent, and a pharmaceutically acceptable carrier.

9. A pharmaceutical composition according to claim 8 wherein said peptide comprises an amino acid sequence selected from the group consisting of SIGYPLP, NTGPNTV, LSNFHSS, GILSPSH MSSPGPA, MSLTTPPAVARP, MTPFPTSNEANL and MGMTVPENLIVQ, or a derivate thereof.

10. A pharmaceutical composition according to claim 8 wherein said peptide comprises an amino acid sequence selected from the group consisting of SIGYPLP, NTGPNTV, LSNFHSS, GILSPSH and MSSPGPA, or a derivate thereof.

11. A pharmaceutical composition according to claim 8 wherein said peptide comprises an amino acid sequence selected from the group consisting of MSLTTPPAVARP, MTPFPTSNEANL and MGMTVPENLIVQ, or a derivate thereof.

12. A pharmaceutical composition according to claim 8 wherein said peptide is up to 100 amino acids long.

13. A pharmaceutical composition according to claim 8 wherein said pharmaceutically active agent is selected from the group consisting of a biologically active drug, a further peptide(s) and polynucleic acid.

14. A pharmaceutical composition according to claim 8 wherein the targeting peptide is in direct association with the vehicle carrying a pharmaceutically active agent.

15. A pharmaceutical composition according to claim 8 wherein the targeting peptide is indirectly associated with the vehicle carrying the pharmaceutically active agent.

16. A pharmaceutical composition according to claim 8 wherein the targeting peptide is covalently bound to the pharmaceutically active agent.

17. A pharmaceutical composition according to claim 8 wherein said composition is used to treat mammals.

18. A pharmaceutical composition according to claim 17 wherein said composition is used to treat humans.

19. A method of targeting a material to cell, said method comprising bringing into association a targeting peptide comprising amino acid sequence selected from the group consisting of:

AASARLP, VYFPAPN, FSMSTPS, IVAQPRL, FPQTYTT, NIAAFSL, QPRLLHH, NIIPAPT, SPTYPRR, TRSQPPL, NTGPNRV, PPPDWTF, SHFSHLR, AFNYPPH, DFLQVSP, SPDHLFC, LEHPPTT, TYPSSEW, IPMHLHN, TSESPTV, YSLSRSL, NHLSALY, TYSLKSA, TSTMPSR, ETIKTNT, ATGFATP, TNSQPSP, TSFFMPP, TAAYRFW, LPPSLYS, SPSVVPF, HSLTFSI, WNSTTQA, HFTHPTH, AGATAMS, STYPIIR, SWNHARV, NHWHGGL, GILSPSH, EAVPTYS, INSNAPG, YSTHSTR, SDLATVR, INSVSPH, MSSPGPA, LPTKTLF, AAWPTSS, LTAELTP, KIDGTPR, VEPARAS, SIGYPLP, WTSDELH, TLGLHMS, LSNFHSS, SLPRNSD, GYQQVFQ,

MSPPGPA, LCMTTLV, SEVAVQG, MAMPQPADHNNS, VSGMSVPVQLAR, MTQTPRTTPWPD, MSLTTPPAVARP, MSNNPIRPPTSG, MTQVYTPPPTST, MTGSQQTLHPPP, MATQPLSGSRLSG, MNMTPPPHSPPK, MTPFPTSNEANL, AMSMTTMPHSPN, MSDLLIEYPPYI, MTLPHELRDGAL, AAVPPPYVMSRP, MSQTPYARPQYV, MTSNPHLNPGPR, MGHNINIPRTPL, LSTPLPYDMRRS, MTRIQDSPYDLR, MSTPPIREQAAH, MTNLPTVTQFPP, MTPIATSIPPQM, MTPTTPIPSLPQ, MTSPHPQTPNLT, MTQQPPLPHPAK, LAKPLPTTSNTG, LSKPIPHIPSSIG, CICRGVGCCLLL, LQPPSMITHPST, LTPPNQVLNPLY, AFPMVGGPDHFR, MLMPQPAHHNNS, AQAMANPLGSHI, SSRIPGFPDPLH, SMRGLPELNPRI, MSSPTVSSAPQY, VLSMQTPPTPLL, THAMSHLDKAH, MAVQPPNTSTSN, MAINDTYPPPRP, MMPPPTSLPSPS, LAQNPIYRAHPH, MQPRPQTLTPAS, LTVPVPVSFAVH, LTSPFSTPLNPR, MAGQPKDSSKTL, ANTPPHTILSTE, MGMTVPENLIVQ, and MTPIQSTQYPHS, or a derivative thereof, with the material to be targeted to form a complex and exposing the complex to a cell(s).

20. A method according to claim 19 wherein said targeting peptide comprises an amino acid sequence selected from the group consisting of SIGYPLP, NTGPNTV, LSNFHSS, GILSPSH MSSPGPA, MSLTTPPAVARP, MTPFPTSNEANL and MGMTVPENLIVQ, or a derivate thereof.

21. A method according to claim 19 wherein said targeting peptide comprises an amino acid sequence selected from the group consisting of SIGYPLP, NTGPNRV, LSNFHSS, GILSPSH and MSPPGPA or a derivative thereof.

22. A method according to claim 19 wherein said targeting peptide comprises an amino acid sequence selected from the group consisting of MSLTTPPAVARP, MTPFPTSNEANL and MGMTVPENLIVQ, or a derivative thereof.

23. A method according to claim 19 wherein said targeting peptide is up to 100 amino acids long.

24. A method according to claim 19 wherein the cell to be targeted is a endothelial cell.

25. A method according to claim 19 wherein said endothelial cell is a vascular endothelial cell.

26. A method according to claim 19 wherein said method is performed *in vivo*.

27. A method according to claim 26 wherein said method is used to target a material selected from the group consisting of drug delivery vehicles, gene therapy vehicles, bacteria, non-ionic surfactant vesicles, microcapsules and vaccine products.

28. A kit comprising a targeting peptide comprising an amino acid sequence selected from the group consisting of: AASARLP, VYFPAPN, FSMSTPS, IVAQPRL, FPQTYTT, NIAAFSL, QPRLLHH, NIIPAPT, SPTYPRR, TRSQPPL, NTGPNRV, PPPDWTF, SHFSHLR, AFNYPPH, DFLQVSP, SPDHLFC, LEHPPTT, TYPSSEW, IPMHLHN, TSESPTV, YSLSRSL, NHLSALY, TYSLKSA, TSTMPSR, ETIKTNT, ATGFATP, TNSQPSP, TSFFMPP, TAAYRFW, LPPSLYS, SPSVVPF, HSLTFSI, WNSTTQA, HFTHPTH, AGATAMS, STYPIIR, SWNHARV, NHWHGGL, GILSPSH, EAVPTYS, INSNAPG, YSTHSTR, SDLATVR, INSVSPH, MSSPGPA, LPTKTLF, AAWPTSS, LTAELTP, KIDGTPR, VEPARAS, SIGYPLP, WTSDELH, TLGLHMS, LSNFHSS, SLPRNSD, GYQQVFQ, MSPPGPA, LCMTTLV, SEVAVQG, MAMPQPADHNNS, VSGMSVPVQLAR, MTQTPRTTPWPD, MSLTTPPAVARP, MSNNPIRPPTSG, MTQVYTPPPTST, MTGSQQTLHPPP, MATQPLSGSRLSG, MNMTPPPHSPPK, MTPFPTSNEANL, AMSMTTMPHSPN, MSDLLIEYPPYI, MTLPHELRDGAL, AAVPPPYVMSRP, MSQTPYARPQYV, MTSNPHLNPGPR, MGHNINIPRTPL, LSTPLPYDMRRS, MTRIQDSPYDLR, MSTPPIREQAAH, MTNLPTVTQFPP, MTPIATSIPPQM, MTPTTPIPSLPQ, MTSPHPQTPNLT, MTQQPPLPHPAK, LAKPLPTTSNTG, LSKPIPHIPSSIG, CICRGVGCCLLL, LQPPSMITHPST, LTPPNQVLNPLY, AFPMVGGPDHFR, MLMPQPAHHNNS,

AQAMANPLGSHI, SSRIPGFPDPLH, SMRGLPELNPRI, MSSPTVSSAPQY, VLSMQTPPTPLL, THAMSHLDKAH, MAVQPPNTSTSN, MAINDTYPPPRP, MMPPPTSLPSPS, LAQNPIYRAHPH, MQPRPQTLTPAS, LTVPVPVSFAVH, LTSPFSTPLNPR, MAGQPKDSSKTL, ANTPPHTILSTE, MGMTVPENLIVQ, and MTPIQSTQYPHS, or a derivative thereof, for transfecting or identifying cell types *in vitro*.

29. A kit according to claim 28 wherein said targeting peptide comprises an amino acid sequence selected from the group consisting of SIGYPLP, NTGPNTV, LSNFHSS, GILSPSH MSSPGPA, MSLTTPPAVARP, MTPFPTSNEANL and MGMTVPENLIVQ, or a derivate thereof.

30. A kit according to claim 28 wherein said targeting peptide comprises an amino acid sequence selected from the group consisting of SIGYPLP, NTGPNRV, LSNFHSS, GILSPSH and MSPPGPA or a derivative thereof.

31. A kit according to claim 28 wherein said targeting peptide comprises an amino acid sequence selected from the group consisting of MSLTTPPAVARP, MTPFPTSNEANL and MGMTVPENLIVQ, or a derivative thereof.

32. A kit according to claim 28 wherein said targeting peptide is up to 100 amino acids long.

33. A kit according to claim 28 wherein said targeting peptide further comprises a linking region for binding molecular groups.

34. A kit according to claim 33 wherein said molecular groups are selected from the group consisting of reagents, pharmaceutically active agents, vesicles, diagnostic markers and antibodies.

35. A method for screening targeting peptides capable of binding to an endothelial cell, said method comprising:

inserting a polynucleotide encoding a potential endothelial cell-binding peptide into an expression vector;

expressing the peptide;

conducting a pre-screening step with the expressed peptides using non-endothelial cells in order to select for the expressed peptides with reduced or negligible binding to the non-endothelial cells;

further screening the expressed peptides which exhibited reduced or negligible binding to the non-endothelial cells using endothelial cells; and

selecting for the expressed peptides which display selective and efficient binding to the endothelial cells.

36. A method according to claim 35 wherein said endothelial cells are human endothelial cells.

37. A method according to claim 35 wherein said non-endothelial cells are selected from a group consisting on human vascular smooth muscle cells and hepatocytes.

38. A gene therapy vector, said vector comprising a targeting peptide as described in claim 1, a vehicle associated with the targeting peptide and a nucleotide sequence comprising the gene for targeting carried within said vehicle.

39. A method of treating a disease, said method comprising administering a pharmaceutical agent in association with a targeting peptide, said targeting peptide comprising amino acid sequence selected from the group consisting of:

AASARLP, VYFPAPN, FSMSTPS, IVAQPRL, FPQTYTT, NIAAFSL, QPRLLHH, NIIPAPT, SPTYPRR, TRSQPPL, NTGPNRV, PPPDWTF, SHFSHLR, AFNYPPH, DFLQVSP, SPDHLFC, LEHPPTT, TYPSSEW, IPMHLHN, TSESPTV, YSLSRSL, NHLSALY, TYSLKSA, TSTMPSR,

ETIKTNT, ATGFATP, TNSQPSP, TSFFMPP, TAAYRFW, LPPSLYS, SPSVVPF, HSLTFSI, WNSTTQA, HFTHPTH, AGATAMS, STYPIIR, SWNHARV, NHWHGGL, GILSPSH, EAVPTYS, INSNAPG, YSTHSTR, SDLATVR, INSVSPH, MSSPGPA, LPTKTLF, AAWPTSS, LTAELTP, KIDGTPR, VEPARAS, SIGYPLP, WTSDELH, TLGLHMS, LSNFHSS, SLPRNSD, GYQQVFQ, MSPPGPA, LCMTTLV, SEVAVQG, MAMPQPADHNNS, VSGMSVPVQLAR, MTQTPRTTPWPD, MSLTTPPAVARP, MSNNPIRPPTSG, MTQVYTPPPTST, MTGSQQTLHPPP, MATQPLSGSRLSG, MNMTPPPHSPPK, MTPFPTSNEANL, AMSMTTMPHSPN, MSDLLIEYPPYI, MTLPHELRDGAL, AAVPPPYVMSRP, MSQTPYARPQYV, MTSNPHLNPGPR, MGHNINIPRTPL, LSTPLPYDMRRS, MTRIQDSPYDLR, MSTPPIREQAAH, MTNLPTVTQFPP, MTPIATSIPPQM, MTPTTPIPSLPQ, MTSPHPQTPNLT, MTQQPPLPHPAK, LAKPLPTTSNTG, LSKPIPHIPSSIG, CICRGVGCCLLL, LQPPSMITHPST, LTPPNQVLNPLY, AFPMVGGPDHFR, MLMPQPAHHNNS, AQAMANPLGSHI, SSRIPGFPDPLH, SMRGLPELNPRI, MSSPTVSSAPQY, VLSMQTPPTPLL, THAMSHLDKAH, MAVQPPNTSTSN, MAINDTYPPPRP, MMPPPTSLPSPS, LAQNPIYRAHPH, MQPRPQTLTPAS, LTVPVPVSFAVH, LTSPFSTPLNPR, MAGQPKDSSKTL, ANTPPHTILSTE, MGMTVPENLIVQ, and MTPIQSTQYPHS, or a derivative thereof, wherein said targeting peptide delivers the pharmaceutical agent for uptake by a target cell.

40. A method according to claim 39 wherein said targeting peptide comprises an amino acid sequence selected from the group consisting of SIGYPLP, NTGPNTV, LSNFHSS, GILSPSH MSSPGPA, MSLTTPPAVARP, MTPFPTSNEANL and MGMTVPENLIVQ, or a derivate thereof.

41. A method according to claim 39 wherein said targeting peptide comprises an amino acid sequence selected from the group consisting of SIGYPLP, NTGPNRV, LSNFHSS, GILSPSH and MSPPGPA or a derivative thereof.

42. A method according to claim 39 wherein said targeting peptide comprises an amino acid sequence selected from the group consisting of MSLTTPPAVARP, MTPFPTSNEANL and MGMTVPENLIVQ, or a derivative thereof.

43. A method according to claim 39 wherein said targeting peptide is up to 100 amino acids long.